UNIVERSITY OF MINNESOTA
THE MEDICAL SCHOOL
MINNEAPOLIS 14

DEPARTMENT OF BACTERIOLOGY
AND IMMUNOLOGY

Dr. Joshua Lederberg
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University of Wisconsin
College of Agriculture
Madison 6, Wisconsin

Dear Joshua,

I have spent some considerable time during the last few weeks studying the strain of E. coli that you sent me under the label of W-2754. This is a most interesting strain, biochemically speaking, and I hope to find time in the near future to study it much more intensively. At the moment, the sugar fermentation reaction of this strain of E. coli is definitely different from other strains as you pointed out in your letter. I have checked it during growth and find that it is negative on sucrose, it produces only acid on maltose, lactose and glucose. However, it does ferment mannitol with both acid and gas. I have done several experiments with resting cell suspensions and find that there is a very low, but definite rate of fermentation of pyruvate, formate, and glucose. The rate on glucose is much better than on pyruvate or formate but only a very small amount of the glucose is fermented, at least to gas. The fermentation of manitol is adaptive and fructose is utilized at a distinctly greater rate than glucose. I have tried to stimulate the rate of fermentation of these sugars and find that several can be stimulated by yeast extract. However, so far, nothing has stimulated the rate on pyruvate. It is also of considerable interest that I have not been able to detect the production of hydrogen, that is, all of these fermentations that I have mentioned produce carbon dioxide but not hydrogen which is quite suprising. There is no doubt at all but that this organism should be studied quite intensively because I feel that we can learn something about the general fermentation of hexoses from the study of this organism. However, I am going to have to table this problem for a while since several other things require my immediate attention. I do hope that I can get back to this personally during the summer or, if not, that I can have one of my students pursue the problem a bit more.

Thank you again for making this strain available to me and I shall let you know, from time to time, of our progress.

With best personal regards,

Sincerely yours,

Herman

Herman C. Lichstein
Associate Professor of
Bacteriology and Immunology

HCL:pao